

AMENDMENTS TO THE SPECIFICATION

In accordance with Rule 1.121, replacement paragraphs are reproduced below. Changes in the amended replacement paragraphs are shown by strikethrough for deleted material, and by underlining for added material.

(I) Please replace the title, in the paragraph encompassing lines 1-2 on page 1, with the following:

~~SCANNING PROBE MICROSCOPY PROBE AND METHOD FOR~~
SCANNING PROBE CONTACT PRINTING

(II) Please replace the paragraph encompassing lines 17-30 on page 15 and lines 1-6 on page 16 with the following paragraph.

The probe 227 can be any type of SPM probe. Preferably, the probe 227 is a probe 27, as described above. Preferably, the scanning probe microscopy (SPM) probe 227 used in this embodiment includes an integrated tip 230 which comprises a material that adheres to fluid 60, such as, polymers, and more specifically, elastomers, like poly(dimethylsiloxane), silicone, rubber, and polyimide. In one embodiment, the tip of the probe 227 comprises a silicone elastomer. Preferably, the tip 230 comprises a polyimide, ~~such as poly(dimethylsiloxane),~~ since polyimides are photodefinable and generally commercially available with a wide range of mechanical properties and achievable film thicknesses. The probe 227 includes a cantilever beam 228. In order to effectively move the tip 230 around to print arbitrary patterns 68, the probe 227, and more specifically, the cantilever beam 228 of the probe 227, has to have appropriate stiffness. The force constant (k) is used as a criterion in probe design. It is calculated using the formula for a simple fixed-free cantilever beam under small displacement assumption:

$$k = \frac{Ewt^3}{4l^3},$$

where E is the modulus of elasticity of the material, and w, t, l are the width, thickness, and length of the rectangular cantilever, respectively, as illustrated in FIG. 3. Preferably, the force constant for the cantilever beam 228 is between 0.01 to 0.5 N/m, more preferably between 0.03 to 0.3 N/m, and most preferably between 0.04 to 0.2 N/m.

(III) Please replace the paragraph encompassing lines 12-28 on page 16 with the following paragraph.

Upon forming the probe 227, ink 60 is attached to the tip 230 of the probe 227, as illustrated in FIG. 4B. ~~Attaching~~ Attaching ink 60 to the tip 230 of the probe 227 is also referred to herein as inking the probe 227. The ink 60 may comprise any material which may be dispersed or dissolved in a solvent, such as, nucleic acids, proteins, and peptides. In one embodiment, the probe 227 is inked before being mounted onto the scanning probe microscope. In another embodiment, the probe 227 is inked upon mounting the probe 227 onto the scanning probe microscope. The probe 227 may be inked in a variety of ways, such as a contact inking method, as described below, and other such methods. For example, in one embodiment, the probe 227, and more specifically, the tips 230 of the probe 227, are inked by positioning the probe 227 near or in contact with a second probe with an already inked tip. Preferably, the second probe is mounted onto a scanning probe microscope for accurate positioning. In one embodiment, the probe 227 is inked by placing the probe 227, and preferably, by placing the tip of the probe 227, near or in contact with a well filled with ink. In one embodiment, the probe 227 is inked by placing the probe 227 near or in contact with a pad that comprises ink. Preferably, the pad comprises PDMS.